

PATENT APPLICATION
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: :
Kenichiro Sato, et al. : Group Art Unit: 1752
Appln. No.: 09/729,953 : Examiner: CHU, JOHN S Y
Filed: December 06, 2000 :
For: POSITIVE TYPE PHOTORESIST COMPOSITION

DECLARATION UNDER 37 C.F.R. §1.132

Assistant Commissioner for Patents
Alexandria, VA 22313-1450

Sir:

I, Kenichiro Sato, do declare and state as follows:

I am a citizen of Japan.

I graduated from Osaka University, Faculty of Engineering, Course of Applied Fine Chemistry in March 1992.

Since April 1992 I have been employed by Fuji Photo Film Co., Ltd. (now FUJIFILM Corporation) and have been engaged in research and development of photoresist photosensitive materials for semiconductors at the Yoshida-Minami Factory Research Division of the company.

I am a co-inventor of the invention described and claimed in the above-named application, and I am familiar with the subject matter disclosed by the application.

In order to demonstrate the unexpected superiority of the present invention, the following experimentation was conducted by me or under my supervision.

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EXPERIMENTATIONEXAMPLE a AND COMPARATIVE EXAMPLE a'

Positive type photoresist compositions of Example a and Comparative Example a' were prepared and evaluated in the same manner as in Examples of the present specification, except for using the following resins (a) and (a'), respectively:

Resin (a) for Example a: Tricyclodecanyl methacrylate / monomer [II-A'-2] / t-butyl methacrylate; and

Resin (a') for Comparative Example a': Tricyclodecanyl methacrylate / monomer [II-A'-2].

The Resin (a) was synthesized in the same manner as in the SYNTHESIS EXAMPLE 19 of the present specification except for using 17.6 g of tricyclodecanyl methacrylate, 11.9 g of monomer [II-A'-2] and 5.7 g of t-butyl methacrylate. Also, the Resin (a') was synthesized in the same manner as in the SYNTHESIS EXAMPLE 16 of the present specification except for using 22.0 g of tricyclodecanyl methacrylate and 15.3 g of monomer [II-A'-2].

The evaluation results are set forth in the following Table.

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TABLE

Example	Resin	Relative Sensitivity	Pattern Profile	Minimum Width of Remaining Thin Line
Example a	(a)	1.0	O	0.32
Comparative Example a'	(a')	5.0	X	0.50

As seen from the above results, it can be recognized that the present invention can obtain unexpected and more excellent effect in each of Sensitivity, Pattern Profile and Minimum Width of Remaining Thin Line, by using the resin containing a unit of the formula (I-2), a repeating structure unit having an alicyclic hydrocarbon moiety (1) and an acid-decomposable unit (2). Further, on taking into consideration the above data based on use of resins without a methacrylic acid unit, it is apparent that the methacrylic acid unit is merely a "more preferable embodiment", and is not an essential component.

Accordingly, it is sufficiently demonstrated that the present invention has a specific effect and is not obvious from the cited reference.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

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Respectively submitted,

Date: Dec. 25, 2006

Kenichiro Sato

Kenichiro Sato